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09/991,876	11/26/2001	Michihiro Ohsuge	016778-0440	3247

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EXAMINER

PATHAK, SUDHANSHU C

ART UNIT PAPER NUMBER

2634

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/991,876

Applicant(s)

OHSUGE, MICHIIRO

Examiner

Sudhanshu C. Pathak

Art Unit-

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on April 28<sup>th</sup>, 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 7, 10, 11, 13 and 14 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 8, 9, 12, 15 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on November 26<sup>th</sup>, 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Claims 1-to-16 are pending in the application.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 6-7, 10-11 & 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Kaku (5,812,593) in further view of Watanabe (6,044,104) in further view of Sourour et al. (WO 99/35763).

Regarding to Claims 1-2, 6, 10, 13, the Applicant Admitted Prior Art (AAPA) discloses a CDMA receiver for receiving plurality of transmissions or propagation paths collectively called multipath signals (Specification, Page 1, line 15-to-Page 2, line 14). The AAPA also discloses the receiver comprises a searcher for carrying out the detection of the multipaths and a rake combining receiver for demodulating (despreading) and combining the detected multipaths for further processing (Specification, Page 2, lines 15-24). The AAPA also discloses the searcher measures the delay profile of the received signals to detect the multipaths of the received signals (Specification, Page 2, line 25-to-Page 3, line 5). The AAPA further discloses a matched filter for measuring the delay profile data of the multipath by calculating the correlation value (Specification, Page 5, lines 11-23 & Specification,

Page 17, 1-8). However, the AAPA does not specify dividing the delay profile into a plurality of data blocks and searching the maximum value of the delay profile at every data block and storing each maximum value at every data block to detect the peak.

Kaku discloses a method and apparatus for demodulating a received signal in a spread spectrum receiver (Abstract, lines 1-4 & Column 1, lines 5-20 & Fig. 1a-b). Kaku also discloses the receiver comprising a RAKE demodulator and a search correlator for receiving signals in a multipath environment (Fig. 6, elements 25, 26 & Column 1, lines 28-39). Kaku discloses the search correlator obtains the correlation results of a pilot signal and a despread code and extracts the peak correlation results and places them in decreasing order of value (Abstract, lines 12-23 & Fig. 6, elements 26, 27, 29, 30 & Column 4, lines 1-23). Kaku also discloses executing the search processing by computing the delay profile of the search signals to obtain the despread code phases used for the RAKE demodulation (Fig. 2 & Fig. 8 & Column 2, lines 55-67 & Column 3, lines 1-5 & Column 4, lines 22-55 & Column 8, lines 45-67). Kaku discloses determining the peak value of the correlation results from the delay profile by comparing the correlation output from the search correlator with immediately preceding and succeeding correlation results and performing the searching based on the shape of the delay profile (Column 4, lines 20-55). Kaku also discloses using the peak code phases (timing) which were extracted to accurately demodulating the information (data) using the RAKE receiver (Column 5, lines 35-62 & Column 6, lines 45-58 & Fig. 6, elements 28, 25). Therefore, it would

have been obvious to one of ordinary skill in the art at the time of the invention that Kaku teaches a method and a corresponding apparatus for determining accurately the maximum values of the correlative peaks of the delay profile and this can be implemented in the receiver as described in the AAPA so as to accurately detect the multipath peaks and avoid false detection of the multipath peaks. However, the AAPA in view of Kaku does not specify dividing the delay profile into a plurality of data blocks. AAPA in view of Kaku does not also explicitly disclose storing the maximum value of the delay profile.

Watanabe discloses search control means of a mobile station apparatus which divides the search window into a number of search widths each width corresponding to a number of search correlators wherein each correlator carries out correlative detection about these divided search widths (Abstract, lines 1-6 & Fig. 's 1, 5, elements 3, 8 & Fig. 2 & Column 4, lines 5-18, 44-57). Watanabe further discloses the search control section rearranges the correlated values in order of electrical power and demodulates the incoming multipath signals from the timing input from the search correlators and the search control section (Column 3, lines 35-67 & Column 4, lines 19-40 & Fig. 1 & Abstract, lines 6-12). Watanabe also discloses obtaining the correlative values within each window and judging the maximum value for each window (Column 4, lines 44-50). Watanabe further discloses each sub window provides the peak for each sub window at a different time interval provided by the clock generator (Fig. 2 & Column 4, lines 1-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that

Watanabe teaches dividing the search window of a mobile station into multiple sub windows and this method and apparatus can be implemented in the mobile receiver as described in the AAPA in view of Kaku so as to provide a highly reliable high speed, by minimizing the searching steps to determine the peaks and avoiding false detection by eliminating the need for setting thresholds, searcher for allowing the reduction of power consumption of the mobile unit without deteriorating the search performance. However, the AAPA in view of Kaku in further view of Watanabe does not also explicitly disclose storing the maximum value of the delay profile.

Sourour discloses a method and apparatus for multipath delay estimation in a spread spectrum communication system (Abstract, lines 1-2 & Specification, Page 1, lines 9-29 & Fig. 3). Sourour also discloses implementing a RAKE receiver to receive the transmitted signal including a delay searcher (Specification, Page 2, lines 10-32 & Specification, Page 6, lines 10-21). Sourour also discloses computing the delay profile and storing the correlation results and once the correlations are complete selecting the largest power peak (Specification, Page 7, lines 2-27). Sourour also discloses using these peak values and corresponding delays and then assign them to the rake fingers (Specification, Page 7, lines 28-31 & Fig. 5 & Fig. 6 & Fig. 7, elements 771, 772, 773, 779 & Fig. 9, elements 991, 992, 993, 994). Sourour also discloses computing and storing a metric that representing the quality of the correlation and the delay estimate (Specification, Page 12, lines 23-27 & Specification, Page 13, lines 1-6 & Fig. 9 & Fig. 10, elements 1002, 1010, 1014 & Fig. 12, elements 1204, 1214, 1220). Therefore, it would have been obvious to one

of ordinary skill in the art at the time of the invention that Sourour teaches storing the peaks of the correlated delay profile and this can be implemented in the mobile receiver as described in the AAPA in view of Kaku in further view of Watanabe so as to provide the possibility of implementing an algorithm as described in Watanabe so as to provide an accurate computation of an error metric on the stored values (peaks) thus allowing a more accurate detection of the received signals in a highly noisy fading channel.

Regarding to Claim 3, 7, 11 & 14, the AAPA in view of Kaku in further view of Watanabe in further view of Sourour discloses a method and apparatus for receiving multipath signal in a spread spectrum communication system comprising computing a delay profile, dividing the delay profile into data blocks, storing and searching the maximum value of the delay profile at every data block and keeping the maximum value at each data block and subsequently detecting a following peak after the previous peak has been detected as described above. The AAPA further discloses a method of subsequently detecting peaks comprising masking a neighboring time region of the delay profile data adjacent to the previous peak to obtain renewed delay profile data and determining, from the renewed delay profile data, a specific one of the data blocks that includes the previous peak (Specification, Page 4, lines 1-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention the AAPA in view of Kaku in further view of Watanabe satisfies the limitations of the claim.

***Allowable Subject Matter***

4. Claims 4-5, 8-9, 12 & 15-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

5. Applicant's arguments with respect to claims 1-3, 6-7, 10-11 & 13-14 have been considered but are moot in view of the new ground(s) of rejection.
6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.



***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, it is recommended to the applicant to amend all the claims so as to be patentable over the cited prior art of record. A detailed list of pertinent references is included with this Office Action (See Attached "Notice of References Cited" (PTO-892)).
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.
- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)-272-3056
  - The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
  - Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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